

DETAILED ACTION

Response to Amendment

This office action is provided in response to the amendment filed by the applicant on 08/25/08. All of the 35 USC 102 rejections were overcome by the applicant. However, the rejections under section 103 have been maintained. Refer to the above-referenced amendment for more details concerning applicant's rebuttal arguments and remarks. Therefore, in general, the present claims are being rejected over both new and previous grounds of rejection as postulated hereinbelow on the written record:

Claim Objections

1. Claim 1 is objected to because of the following informalities: the limitation "second offgas separated the adsorber to the fuel cell" appears to be grammatically awkward. Appropriate correction is required.

Double Patenting

2. Applicant is advised that should claim 15 be found allowable, claim 18 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 15 is rejected under 35 U.S.C. 102(e) as being anticipated by Keefer et al 2006/0182680.

Keefer et al disclose that the hydrogen PSA unit comprises variations of adsorbents in SEQUENTIAL zones of the adsorbents which may be applied in conjunction with alternative fuel processors to generate hydrogen rich reformat from which CO and other impurities must be removed (P0103) Other specified combinations of the hydrogen PSA unit are possible (P0103). Keefer et al also made known that the pressure swing adsorption uses two or more stationary adsorbents in parallel so as to have them connected in alternating SEQUENCE (P0009). *Thus, Keefer et al at once envisage a plurality of adsorber containers charged with an adsorbing material as instantly claimed.* Keefer et al disclose a hydrogen purification PSA system 205 (PSA stands for pressure swing adsorption) (P0096/CLAIM 18). Upshot

Keefer et al further teach substitution or combined use of any type of hydrogen purification unit such as gas separation devices including other types of adsorption modules or gas membrane separation systems for hydrogen purification (P0095 & 0005). Ejector 242' (P0101) or even the conduit line (P0101) itself can act as the pressurizer. *The upshot of Keefer et al's teaching is that Keefer et al at once envisage the use of combinations acting as part of a*

mechanism for processing and purifying hydrogen as instantly claimed (P0103). Additionally, absent the specific degree of pressure and/or pressurizing mechanism occurring through the membrane other than the membrane per se, it is noted that the membrane itself pressurizes the exhaust gas as the membrane constitutes a tangible barrier through which the exhaust gas passes, thereby varying the pressure thereof. Notice also that is unknown whether pressure is increased or decreased as a result of passing the claimed gas through the membrane. Thus, the only functional factor applicable to the claimed membrane is that it (the membrane) affects the pressure but there is no indication how such a pressure is positively or negatively affected. Since there is a physical barrier acting as the membrane, such a barrier represents a blocking feature causing resistance to the flow of the hydrogen, and that resistance necessarily affects the pressure thereof.

Thus, the present claim is anticipated.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
8. Claims 1-4, 6-7, 9-10, 13, 15 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keefer et al 2006/0182680 in view of Ogino 2002/0031453.

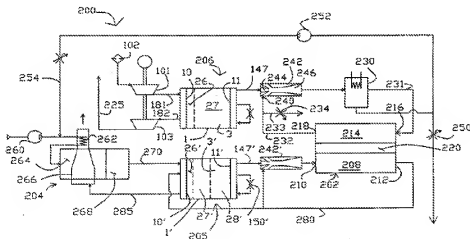
With regard to claims 1, 15 and 19-20:

Keefer et al disclose a system and process for providing hydrogen to fuel cells (TITLE/Abstract) including a steam reforming fuel processor 204, a fuel cell 202, and a hydrogen purification PSA system 205 (*PSA stands for pressure swing adsorption*) (P0096/CLAIM 18). Reforming is used to generate hydrogen (P0004, 0103), and the fuel cell provides a source of electrical current (P0003). It is evident from **Figure 6** below that the hydrogen purification PSA system 205 is both upstream and downstream of the fuel cell 202 (See FIGURE 6). *Thus, it also receives the anode exhaust of the fuel cell.* **FIGURES 7-9** also depict other fuel cell power plant systems. Keefer et al disclose substitution or combined use of any type of hydrogen purification unit such as gas separation devices including other types of adsorption modules or gas membrane separation systems (P0095 & 0005).

Keefe et al disclose a hydrogen purification PSA system 205 (*PSA stands for pressure swing adsorption*) (P0096/CLAIM 18). Keefe et al further teach substitution or combined use of any type of hydrogen purification unit such as gas separation devices including other types of adsorption modules or gas membrane separation systems (P0095 & 0005). Ejector 242' (P0101) or even the conduit line (P0101) itself can act as the pressurizer.

Keefe et al disclose using a steam reforming fuel processor 204 (P0096/CLAIM 18); or alternative fuel processors such as an autothermal or partial oxidation reactors for processing of hydrocarbon fuels to generate hydrogen rich reformat (P0103). Reforming is used to generate hydrogen (P0004, 0103), and the fuel cell provides a source of electrical current (P0003). *Steam and autothermal reforming encompass the use or transfer of heat.*

FIG. 6



As applicable to independent claim 15: Keefer et al disclose that the hydrogen PSA unit comprises variations of adsorbents in SEQUENTIAL zones of the adsorbers which may be applied in conjunction with alternative fuel processors to generate hydrogen rich reformat from

which CO and other impurities must be removed (P0103) Other specified combinations of the hydrogen PSA unit are possible (P0103). Keefer et al also made known that the pressure swing adsorption uses two or more stationary adsorbers in parallel so as to have them connected in alternating SEQUENCE (P0009). *Thus, Keefer et al at once envisage a plurality of adsorber containers charged with an adsorbing material as instantly claimed.* Keefer et al disclose a hydrogen purification PSA system 205 (*PSA stands for pressure swing adsorption*) (P0096/CLAIM 18). Keefer et al further teach substitution or combined use of any type of hydrogen purification unit such as gas separation devices including other types of adsorption modules or gas membrane separation systems for hydrogen purification (P0095 & 0005). Ejector 242' (P0101) or even the conduit line (P0101) itself can act as the pressurizer. *Additionally, Absent the specific degree of pressure and/or pressurizing mechanism occurring through the membrane other than the membrane per se, it is noted that the membrane itself pressurizes the exhaust gas as the membrane constitutes a tangible barrier through which the exhaust gas passes, thereby varying the pressure thereof.*

With regard to claims 2-4:

Keefer et al disclose a hydrogen purification PSA system 205 (*PSA stands for pressure swing adsorption*) (P0096/CLAIM 18). Keefer et al further teach substitution or combined use of any type of hydrogen purification unit such as gas separation devices including other types of adsorption modules or gas membrane separation systems (P0095 & 0005). Ejector 242' (P0101) or even the conduit line (P0101) itself can act as the pressurizer.

With regard to claims 6 and 13:

The hydrogen purification PSA system 205 comprises plural zones and adsorbent materials for hydrogen purification (P0100 & 0103).

With regard to claim 7:

Keefer et al disclose using a steam reforming fuel processor 204 (P0096/CLAIM 18); or alternative fuel processors such as an autothermal or partial oxidation reactors for processing of hydrocarbon fuels to generate hydrogen rich reformat (P0103). Reforming is used to generate hydrogen (P0004, 0103), and the fuel cell provides a source of electrical current (P0003). *Steam and autothermal reforming encompass the use or transfer of heat.*

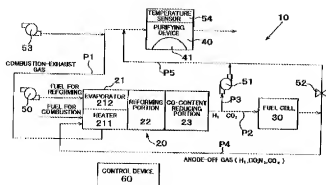
With regard to claims 9-10:

Keefer et al discuss purification and storage of hydrogen either as compressed gas or cryogenic liquid; and distribution of said hydrogen to a fuel cell vehicle (P0004).

Keefer et al disclose a hydrogen supply unit as discussed above. However, the preceding reference does not expressly disclose the fuel cell in direct communication with a downstream outlet of the reformation means.

Ogino discloses a systems for purifying exhaust gas emission from fuel reforming device (TITLE) including a fuel reforming device 20 wherein the outlet thereof is in direct communication with a fuel cell 30 which supplies the exhaust gas of the fuel cell to a purifying device 40 (P0018/ FIGURE 1).

FIG. 1



In view of the above, it would have been obvious to a person of ordinary skill in the pertinent art at the time the invention was made to have Keefer's fuel cell in direct communication with a downstream outlet of the reformation means as taught by Ogino et al because Ogino et al disclose the fuel cell is adapted to receive as a fuel the reformed gas supplied from the fuel reforming device to generate electric energy. Thus, Ogino et al teaches the adaptability and suitability of directly supplying reformed gas from the reformer to the fuel cell for power generation purposes.

9. Claims 1-4, 6-7, 9-10, 13, 15 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keefer et al 2006/0182680 in view of Parchamazad 2004/0081861.

With regard to claims 1, 15 and 19-20:

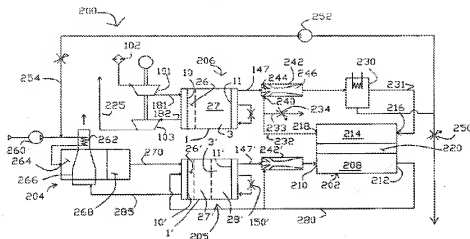
Keefer et al disclose a system and process for providing hydrogen to fuel cells (TITLE/Abstract) including a steam reforming fuel processor 204, a fuel cell 202, and a hydrogen purification PSA system 205 (*PSA stands for pressure swing adsorption*) (P0096/CLAIM 18). Reforming is used to generate hydrogen (P0004, 0103), and the fuel cell provides a source of electrical current (P0003). It is evident from **Figure 6** below that the

hydrogen purification PSA system 205 is both upstream and downstream of the fuel cell 202 (See FIGURE 6). *Thus, it also receives the anode exhaust of the fuel cell.* **FIGURES 7-9** also depict other fuel cell power plant systems. Keefer et al disclose substitution or combined use of any type of hydrogen purification unit such as gas separation devices including other types of adsorption modules or gas membrane separation systems (P0095 & 0005). (*Emphasis added*→) From **FIGURE 6**, it can be appreciated that "exhaust gas" in line 280 only comes from the fuel cell (See FIGURE 6) as instantly claimed.

Keefer et al disclose a hydrogen purification PSA system 205 (*PSA stands for pressure swing adsorption*) (P0096/CLAIM 18). Keefer et al further teach substitution or combined use of any type of hydrogen purification unit such as gas separation devices including other types of adsorption modules or gas membrane separation systems (P0095 & 0005). Ejector 242' (P0101) or even the conduit line (P0101) itself can act as the pressurizer.

Keefer et al disclose using a steam reforming fuel processor 204 (P0096/CLAIM 18); or alternative fuel processors such as an autothermal or partial oxidation reactors for processing of hydrocarbon fuels to generate hydrogen rich reformat (P0103). Reforming is used to generate hydrogen (P0004, 0103), and the fuel cell provides a source of electrical current (P0003). *Steam and autothermal reforming encompass the use or transfer of heat.*

FIG. 6



As applicable to independent claim 15: Keefer et al disclose that the hydrogen PSA unit comprises variations of adsorbents in SEQUENTIAL zones of the adsorbers which may be applied in conjunction with alternative fuel processors to generate hydrogen rich reformat from which CO and other impurities must be removed (P0103). Other specified combinations of the hydrogen PSA unit are possible (P0103). Keefer et al also made known that the pressure swing adsorption uses two or more stationary adsorbers in parallel so as to have them connected in alternating SEQUENCE (P0009). Thus, Keefer et al at once envisage a plurality of adsorber containers charged with an adsorbing material as instantly claimed. Keefer et al disclose a hydrogen purification PSA system 205 (PSA stands for pressure swing adsorption) (P0096/CLAIM 18). Keefer et al further teach substitution or combined use of any type of hydrogen purification unit such as gas separation devices including other types of adsorption modules or gas membrane separation systems for hydrogen purification (P0095 & 0005). Ejector 242' (P0101) or even the conduit line (P0101) itself can act as the pressurizer. Additionally, Absent the specific degree of pressure and/or pressurizing mechanism occurring through the membrane other than the membrane per se, it is noted that the membrane itself pressurizes the

exhaust gas as the membrane constitutes a tangible barrier through which the exhaust gas passes, thereby varying the pressure thereof.

With regard to claims 2-4:

Keefer et al disclose a hydrogen purification PSA system 205 (*PSA stands for pressure swing adsorption*) (P0096/CLAIM 18). Keefer et al further teach substitution or combined use of any type of hydrogen purification unit such as gas separation devices including other types of adsorption modules or gas membrane separation systems (P0095 & 0005). Ejector 242' (P0101) or even the conduit line (P0101) itself can act as the pressurizer.

With regard to claims 6 and 13:

The hydrogen purification PSA system 205 comprises plural zones and adsorbent materials for hydrogen purification (P0100 & 0103).

With regard to claim 7:

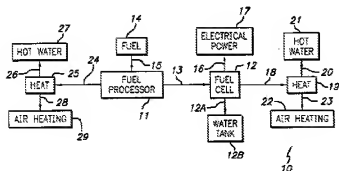
Keefer et al disclose using a steam reforming fuel processor 204 (P0096/CLAIM 18); or alternative fuel processors such as an autothermal or partial oxidation reactors for processing of hydrocarbon fuels to generate hydrogen rich reformat (P0103). Reforming is used to generate hydrogen (P0004, 0103), and the fuel cell provides a source of electrical current (P0003). *Steam and autothermal reforming encompass the use or transfer of heat.*

With regard to claims 9-10:

Keefer et al discuss purification and storage of hydrogen either as compressed gas or cryogenic liquid; and distribution of said hydrogen to a fuel cell vehicle (P0004).

Keefer et al disclose a hydrogen supply unit as discussed above. However, the preceding reference does not expressly disclose the fuel cell in direct communication with a downstream outlet of the reformation means.

Parchamazad discloses a fuel cell power generating system including a fuel processor 11 which directly supplies reformed gas to the fuel cell 12 via line 13, and wherein the exhaust of the fuel cell is further supplied to water tank 12B and/or heat source 19 (FIGURE 1). *Any one of water tank 12B and/or heat source 19 can act as the purification element for purifying hydrogen in an exhaust gas regardless of its particular functionality.*



In view of the above, it would have been obvious to a person of ordinary skill in the pertinent art at the time the invention was made to have Keefer's fuel cell in direct communication with a downstream outlet of the reformation means as taught by Parchamazad because Parchamazad discloses the fuel cell is adapted to receive as a fuel the reformed gas supplied from the fuel reforming device to generate electric energy. Thus, Parchamazad teaches the adaptability and suitability of directly supplying reformed gas from the reformer to the fuel cell for power generation purposes.

10. Claims 5, 12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Keefer et al 2006/0182680 in view of Ogino 2002/0031453, and/or b) Keefer et al 2006/0182680 in view of Parchamazad 2004/0081861 as applied to claims 3-4 and 15 above, and further in view of Carr et al 4233132.

Keefer et al, Ogino and/or Parchamazad are applied, argued and incorporated herein the reasons expressed above. However, the preceding prior art references do not expressly disclose the specific membrane separator.

Carr et al disclose an apparatus for producing (purifying) hydrogen comprising electrodes being separated by a material and means for imposing electrical potential across the electrode for generating hydrogen (ABSTRACT/CLAIM 13).

With these teaching, it would have been obvious to a person of ordinary skill in the pertinent art at the time the invention was made to incorporate the specific membrane separator of Carr et al into the fuel cell system of Keefer et al, Ogino and/or Parchamazad as Carr et al discloses that it is known to use the above hydrogen membrane separator for continuously producing a suitable quantity of hydrogen which is separately collected and usable in gaseous form. Thus, Carr et al's hydrogen purification/generating apparatus assists in the generation, production or purification of hydrogen.

11. Claims 11, 14, 18 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Keefer et al 2006/0182680 in view of Ogino 2002/0031453, and/or b) Keefer et al 2006/0182680 in view of Parchamazad 2004/0081861 as applied to claims 3-4 above, and further

in view of Applicant's Admission of Prior Art (heretofore the AAPA) (*Applicant's specification, page 2, lines 1-8*).

Keefer et al, Ogino and/or Parchamazad are applied, argued and incorporated herein the reasons expressed above.

As to claims 11 and 14:

Keefer et al discuss purification and storage of hydrogen either as compressed gas or cryogenic liquid; and distribution of said hydrogen to a fuel cell vehicle (P0004). Ejector 242' (P0101) or even any of the conduit lines (P0101) itself can act as the pressurizer. *Keefer et al readily envisions hydrogen storage for use in a fuel cell vehicle.*

However, the preceding prior art reference does not expressly disclose the specific first tank for storing hydrogen.

The AAPA discloses that it is known to include a storage tank 35 for storing the hydrogen purified by the purifier 33 and the hydrogen which has not been used in the fuel cell (*Applicant's specification, page 2, lines 1-8*).

With these teaching, it would have been obvious to a person of ordinary skill in the pertinent art at the time the invention was made to incorporate the specific first tank for storing hydrogen of the AAPA into the fuel cell system of Keefer et al, Ogino and/or Parchamazad as the AAPA discloses that such a storage tank is useful for storing the hydrogen purified by the purifier and the hydrogen which has not been used in the fuel cell. Thus, the storing tank provides the benefit of storing hydrogen.

Response to Arguments

12. Applicant's arguments with respect to claim 15 have been considered but are moot in view of the new ground(s) of rejection.

13. Applicant's arguments filed 08/25/08 have been fully considered but they are not persuasive.

14. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (on pages 13-15 of the 08/25/08 amendment):

- a) *"the hydrogen gas is stored in the tank for later use";*
- b) *"a small amount of hydrogen in the separated second offgas";*
- c) *"the second offgas is provided back upstream of the fuel cell...";*
- d) *"the carbon compound is effectively eliminated at the membrane separator arranged upstream of the adsorber, thereby enabling the use of the hydrogen contained in the reformed gas without any waste to generate electric power";*
- e) applicant has argued that apparently the present claims positively recite a sequence i.e. *"a first offgas containing a carbon compound, and then the resulting purified hydrogen gas is provided to the adsorber"*, the present claims only require that at some point the hydrogen stream to be processed passes through membrane and the adsorber but there is no requirement that such a hydrogen stream goes first to the membrane, and subsequently to the adsorber as instantly argued by the applicant;
- f) *"Keefer does not teach or suggest using both PEM and PSA to successfully purify hydrogen"]*

are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

None of the foregoing limitations are recited or present in any one of the independent claims (i.e. claims 1 and 15) in order to argue that they all contain such a subject matter in a positive manner. Thus, applicant's arguments are full of subject matter which is not commensurate in scope with the claimed invention.

With respect to "PEM", nowhere does any one of the independent claims appears to recite or define what is meant by "PEM" in the context of the claimed invention. For instance, paragraph 0095 CLEARLY discloses that the disclosed systems and processes could be used with PEM fuel cells. Thus, it is evident that the prior art of record does show using PEM systems. This is equally applicable to both independent claims (i.e. claims 1 and 15).

15. With respect to applicant's arguments regarding the apparent recitation of combining an undefined PEM and a PSA in both claims 1 and 15, in addition to what has been expressed by the Examiner in item 14 supra, Keefer et al further teach substitution or combined use of any type of hydrogen purification unit such as gas separation devices including other types of adsorption modules or gas membrane separation systems for hydrogen purification (P0095 & 0005). Ejector 242' (P0101) or even the conduit line (P0101) itself can act as the pressurizer. The upshot of Keefer et al's teaching is that Keefer et al at once envisage the use of combinations acting as part of a mechanism for processing and purifying hydrogen as instantly claimed (P0103). Additionally, Absent the specific degree of pressure and/or pressurizing mechanism occurring through the membrane other than the membrane per se, it is noted that the membrane

itself pressurizes the exhaust gas as the membrane constitutes a tangible barrier through which the exhaust gas passes, thereby varying the pressure thereof.

16. With particular respect to applicant's arguments concerning the apparent sequence or order of processing the hydrogen gas in both independent claims 1 and 15: Keefer et al disclose that the hydrogen PSA unit comprises variations of adsorbents in SEQUENTIAL zones of the adsorbers which may be applied in conjunction with alternative fuel processors to generate hydrogen rich reformat from which CO and other impurities must be removed (P0103) Other specified combinations of the hydrogen PSA unit are possible (P0103). Keefer et al also made known that the pressure swing adsorption uses two or more stationary adsorbers in parallel so as to have them connected in alternating SEQUENCE (P0009). *Thus, Keefer et al at once envisage a plurality of adsorber containers charged with an adsorbing material as instantly claimed.* Keefer et al disclose a hydrogen purification PSA system 205 (*PSA stands for pressure swing adsorption*) (P0096/CLAIM 18). Additionally, applicant himself has admitted on the record at page 14 (3rd full paragraph) the following: "*Regarding claim 15, applicant submits that hydrogen purification has conventionally been conducted by passing hydrogen gas through a plurality of containers charged with adsorbent...*". Thus, the addition of the subject matter concerning the plurality of containers is not novel at all and adds nothing of importance to the patentability of independent claim 15.

17. As to the limitation "*varying a pressure of the exhaust gas*", absent the specific degree of pressure and/or pressurizing mechanism occurring through the membrane other than the membrane per se, it is noted that the membrane itself pressurizes the exhaust gas as the membrane constitutes a tangible barrier through which the exhaust gas passes, thereby varying

the pressure thereof. Notice also that is unknown whether pressure is increased or decreased as a result of passing the claimed gas through the membrane. Thus, the only functional factor applicable to the claimed membrane is that it (the membrane) affects the pressure but there is no indication how such a pressure is positively or negatively affected. Since there is a physical barrier acting as the membrane, such a barrier represents a blocking feature causing resistance to the flow of the hydrogen, and that resistance necessarily affects the pressure thereof.

18. Last but not least, it is worthwhile to note that some features in independent claims 1 and 15 do not appear to positively encompass their respective functional subject matter as the only requirement is that, for instance, "the membrane" be "for conducting membrane separation" or "separating hydrogen"; and "the adsorber" be "conducting separation" or "purifying the hydrogen". Therefore, it is contended that those limitations do not distinguish over prior art because the recitation that an element, feature and/or member is "*for*" performing a function is not a positive limitation but only requires the ability to so perform. *See MPEP 2111.04.*

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Raymond Alejandro/
Primary Examiner, Art Unit 1795

